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1. An arrangement comprising:

source means providing a DC voltage between a first and a second DC terminal;

inverter means connected with the DC terminals and operative to provide a sinusoidal AC voltage between a first and a second AC terminal; the AC voltage having a fundamental period; the inverter means being operative for a part of each fundamental period to cause the first AC terminal to be at the same potential as that of the first DC terminal; the part having a duration approximately one quarter that of the fundamental period; and

circuit means operative to connect a gas discharge lamp with the AC terminals.

2. An arrangement comprising:

a source providing a DC voltage between a first and a second DC terminal;

first means connected with the DC terminals and operative to provide a sinusoidal AC voltage between a first and a second AC terminal; the AC voltage having a fundamental period; the first means being operative for about 25% of the time during each fundamental period to cause the first AC terminal to be at the same potential as that of the first DC terminal; and

second means connecting a gas discharge lamp with the AC terminals.

3. An arrangement comprising:

source means providing a DC voltage between a first and a second DC terminal;

inverter means connected with the DC terminals and operative to provide a substantially sinusoidal AC voltage between a first and a second AC terminal; the AC voltage having a fundamental period; the inverter means including electronic means operative for a first brief part of each fundamental period to cause the first AC terminal to be electrically connected with the first DC terminal, such that there is substantially no voltage difference between the first AC terminal and the first DC terminal during the first brief part; the first brief part having a duration approximately equal to one quarter that of the fundamental period; and

circuit means operative to connect a gas discharge lamp with the AC terminals.

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~~7~~. The arrangement of claim ~~6~~ wherein the electronic means is also operative for a second brief part during each fundamental period to cause the first AC terminal to be electrically connected with the second DC terminal; the duration of the second part being substantially the same as that of the first part.

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~~8~~. (~~Amended~~) An arrangement comprising:

a reference terminal;

a DC source connected with the reference terminal and operative to provide a DC voltage between a positive DC terminal and a negative DC terminal;

[half-bridge] inverter connected with the DC terminals and operative, as viewed from the reference terminal, to provide a first non-sinusoidal AC voltage at a first AC terminal;

a tank inductor connected between the first AC terminal and a second AC terminal; the second AC terminal exhibiting, as viewed from the reference terminal, a second non-sinusoidal AC voltage; a third AC voltage being present across the tank inductor; the third AC voltage being of sinusoidal waveshape; and

circuit means operative to provide for disconnectable connection of a gas discharge lamp across the tank inductor.

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~~9~~. The arrangement of claim ~~8~~ wherein: (i) a first rectifier is connected between the second AC terminal and the positive DC terminal, with the first rectifier's cathode being connected with the positive DC terminal; and (ii) a second rectifier being connected between the second AC terminal and the negative DC terminal, the second rectifier's anode being connected with the negative DC terminal.

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~~10~~. The arrangement of claim ~~8~~ wherein a first tank capacitor is connected between the first AC terminal and the reference terminal.

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~~11~~. The arrangement of claim ~~8~~ wherein a second tank capacitor is connected between the second AC terminal and the reference terminal.

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~~12~~. The arrangement of claim ~~8~~ wherein the half-bridge inverter includes a first transistor connected between the negative terminal and the first AC terminal and a second transistor connected between the positive DC terminal and the first AC terminal.

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13. (Amended) An arrangement comprising:

a source providing a DC voltage at a set of DC terminals; the source being connected with the power line voltage of an ordinary electric utility power line; the power line voltage having a peak magnitude; the magnitude of the DC voltage being substantially higher than the peak magnitude;

a first set of electrical components [means] connected in circuit with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the main AC voltage having a fundamental period; and

a second set of electrical components [means] operative to connect a gas discharge lamp in circuit with the AC terminals.

Claims 14-28 are cancelled and replaced with new claims 29-43, respectively.

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~~28~~. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

a first circuit arrangement connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the main AC voltage having a fundamental period; the first means including:

(a) a first terminal at which exists, with respect to a reference terminal, a first AC voltage having a first peak-to-peak magnitude and characterized by having four time segments: (i) a first time segment having a first duration, all during which the instantaneous magnitude of the first AC voltage increases from a first voltage level to a second voltage level by way of a gradually diminishing rate of increase; (ii) a second time segment having a second duration, all during which the instantaneous magnitude of the first AC voltage remains substantially constant at the second voltage level; (iii) a third segment having a third duration, all during which the instantaneous magnitude of the first AC voltage decreases from the second voltage level back to the first voltage level by way of a gradually diminishing rate of decrease; and (iv) a fourth time segment having a fourth duration, all during which the instantaneous magnitude of the first AC voltage remains substantially constant at the first voltage level; the first duration being approximately equal to the second duration; and

(b) a second terminal at which exists, with respect to the reference terminal, a second AC voltage; the second AC voltage having a second peak-to-peak magnitude and being characterized by being different from the first AC voltage in such manner as to cause a substantially sinusoidal output AC voltage to exist between the first and the second AC terminal;

the substantially sinusoidal AC output voltage thus being the same as the main AC voltage; and

second circuit arrangement operative to connect a gas discharge lamp in circuit with the AC terminals.

~~30~~ 11. The arrangement of claim ~~29~~ 10 wherein the substantially sinusoidal AC output voltage has a peak-to-peak magnitude about twice as large as the first peak-to-peak magnitude.

~~31~~ 12. The arrangement of claim ~~29~~ 10 wherein the second circuit arrangement includes a reactive current-limiting means.

~~32~~ 13. The arrangement of claim ~~29~~ 10 wherein the first peak-to-peak magnitude is equal to the second peak-to-peak magnitude.

33. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

a reference terminal;

a half bridge inverter connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal, a tank inductor being connected between the first and the second AC terminal; as viewed from the reference terminal, a first non-sinusoidal AC voltage being present at the first AC terminal, and a second non-sinusoidal AC voltage; and

connect means operative to connect a gas discharge lamp in circuit with the AC terminals;

34. The arrangement of claim 33 wherein: (i) the set of DC terminals includes a positive DC terminal and a negative DC terminal; (ii) a first rectifier is connected between the second AC terminal and the positive DC terminal, with the first rectifier's cathode being connected with the positive DC terminal; and (iii) a second rectifier being connected between the second AC terminal and the negative DC terminal, the second rectifier's anode being connected with the negative DC terminal.

35. The arrangement of claim 33 wherein a first tank capacitor is connected between the first AC terminal and the reference terminal.

36. The arrangement of claim 33 wherein a second tank capacitor is connected between the second AC terminal and the reference terminal.

37. The arrangement of claim 33 wherein: (i) the source has a negative DC terminal and a positive DC terminal; and (ii) the half-bridge inverter includes a first transistor connected between the negative DC terminal and the first AC terminal and a second transistor connected between the positive DC terminal and the first AC terminal.

38. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage at a pair of AC terminals; the inverter circuit being characterized by including: (i) a first and a second transistor, (ii) a first transformer connected with the first transistor, and (iii) a second transformer connected with the second transistor; the first transformer being an entity separate from the second transformer, such that magnetic flux within the first transformer does not affect magnetic flux within the second transformer; and

a lamp connected in circuit with the AC terminals.

39. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the inverter circuit including: (i) a first and a second periodically switching transistor means, (ii) a first transformer means connected with control terminals of the first transistor means, which first transformer means has a first ferro-magnetic core carrying a first magnetic flux, and (iii) a second transformer means connected with control terminals of the second transistor means, which second transformer means has a second ferro-magnetic core carrying a second magnetic flux; the first ferro-magnetic core being magnetically separate from the second ferro-magnetic core, such that the first magnetic flux is not affected by the second magnetic flux; and

a lamp connected in circuit with the AC terminals.

40. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the inverter circuit including: (i) a first and a second periodically switching transistor means, (ii) a first saturable transformer means connected with control terminals of the first transistor means, which first saturable transformer means has a first ferro-magnetic core carrying a first magnetic flux, and (iii) a second saturable transformer means connected with control terminals of the second transistor means, which second saturable transformer means has a second ferro-magnetic core carrying a second magnetic flux; the first ferro-magnetic core being magnetically separate from the second ferro-magnetic core, such that the first magnetic flux need not be the same as the second magnetic flux; and

a lamp connected in circuit with the AC terminals.

41. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the main AC voltage having a fundamental period; the inverter circuit having a first and a second periodically conducting transistor means; the first transistor means having a first pair of control terminals at which is provided a first control signal functional to render the first transistor means conductive in its forward direction for a first duration of each fundamental period, such that the first duration is clearly shorter than half of the complete duration of the fundamental period; the second transistor means having a second pair of control terminals at which is provided a second control signal functional to render the second transistor means conductive in its forward direction for a second duration of each fundamental period, such that the second duration is clearly shorter than half of the complete duration of the fundamental period; the first transistor means being prevented from being conductive at the same time as the second transistor means is conductive; and

a lamp connected in circuit with the AC terminals.

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42. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;

a reference terminal;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the inverter circuit including an output terminal and being operative to provide, between the output terminal and the reference terminal, an output voltage having a substantially trapezoidal waveshape; the trapezoidal waveshape including four time segments: (i) a first time segment having a first duration, all during which the instantaneous magnitude of the output voltage increases gradually from a first voltage level to a second voltage level; (ii) a second time segment having a second duration, all during which the instantaneous magnitude of the output voltage remains substantially constant at the second voltage level; (iii) a third time segment having a third duration, all during which the instantaneous magnitude of the output voltage decreases gradually from the second voltage level back to the first voltage level, the duration of the third time segment being equal to or longer than about one tenth of the duration of the second time segment; and (iv) a fourth time segment having a fourth duration, all during which the instantaneous magnitude of the output voltage remains substantially constant at the first voltage level; and

a gas discharge lamp connected in circuit with the AC terminals.

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43. An arrangement comprising:

a source providing a DC voltage at a set of DC terminals;the source having a DC center terminal;

an inverter circuit connected with the DC terminals and operative to produce a main AC voltage between a first and a second AC terminal; the inverter circuit including a half-bridge inverter having an output terminal and being operative to provide, between the output terminal and the DC center terminal, an output voltage having a substantially trapezoidal waveshape; the trapezoidal waveshape including four time segments: (i) a first time segment having a first duration, all during which the instantaneous magnitude of the output voltage increases gradually from a first voltage level to a second voltage level; (ii) a second time segment having a second duration, all during which the instantaneous magnitude of the

output voltage remains substantially constant at the second voltage level; (iii) a third time segment having a third duration, all during which the instantaneous magnitude of the output voltage decreases gradually from the second voltage level back to the first voltage level, the duration of the third time segment being equal to or longer than about one tenth of the duration of the second time segment; and (iv) a fourth time segment having a fourth duration, all during which the instantaneous magnitude of the output voltage remains substantially constant at the first voltage level; and

a gas discharge lamp being connected in circuit with the AC terminals.

44. An arrangement comprising:

a power line operative to provide an AC power line voltage at a pair of power line terminals;

rectifier and filter circuit having a pair of power input terminals connected with the power line terminals; the rectifier and filter circuit being operative to provide a DC voltage between a pair of DC terminals; the magnitude of the DC voltage being larger than the peak magnitude of the AC power line voltage provided at the power input terminals;

an inverter circuit connected with the DC terminals and operative to produce a substantially sinusoidal AC voltage between a pair of AC output terminals; the sinusoidal AC voltage having a fundamental period; the inverter circuit having a first and a second periodically conducting transistor means; the first transistor means having a first pair of control terminals at which is provided a first control signal functional to render the first transistor means conductive for a first duration of each fundamental period; the second transistor means having a second pair of control terminals at which is provided a second control signal functional to render the second transistor means conductive for a second duration of each fundamental period; the first transistor means being prevented from being conductive at the same time as the second transistor means is conductive; and

a gas discharge lamp connected in circuit with the AC terminals.

45. The arrangement of claim 44 wherein an electrically conductive path exists between one of the power line terminals and one of the DC terminals.

46. The arrangement of claim 44 wherein the first control signal has a peak-to-peak magnitude substantially larger than twice the forward voltage drop of an ordinary semiconductor diode.

47. The arrangement of claim 44 wherein the first control signal is a voltage with magnitude periodically alternating between: (i) being at or above a level normally operative to cause the first transistor means to be conductive in its forward direction, and (ii) being below this level; during each fundamental period, the magnitude of the first control voltage being at or above this level for a length of time that is distinctly shorter than half the duration of the fundamental period.

48. The arrangement of claim 44 wherein the first and second transistor means are series-connected across the DC terminals.

49. The arrangement of claim 44 wherein, during each fundamental period, current flows in the forward direction through the first transistor means for a length of time that is distincly shorter than half the duration of the fundamental period.

50. The arrangement of claim 44 wherein the inverter circuit is characterized by including an L-C circuit having a natural resonance frequency at or near the fundamental frequency of the substantially sinusoidal voltage.

51. The arrangement of claim 44 wherein: (i) the magnitude of the AC power line voltage is about 120 Volt RMS; and (ii) the magnitude of the DC voltage is substantially higher than 200 Volt.

52. The arrangement of claim 44 wherein the rectifier and filter circuit includes a rectifier connected between one of the power line terminals and one of the DC terminals.

53. The arrangement of claim 44 wherein the inverter circuit includes a sub-circuit operative, in response to a control action, to control the frequency of the substantially sinusoidal AC voltage.

54. The arrangement of claim 53 wherein the inverter circuit also includes frequency-dependent impedance means.